

FLIGHT

The
**AIRCRAFT
ENGINEER
&
AIRSHIPS**

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1925

- Jan. 9 Mr. R. J. Parrott, Hons. Member: "The History and Evolution of the Avro Training Machine," before I.Ae.E.
- Jan. 23 ... Lieut. N. A. Olechnovitch, Member: "A Few Experiments with Shock-Absorbing Hulls for Flying Boats," before I.Ae.E.
- Feb. 5 Air Commodore C. R. Samson, C.M.G., D.S.O., A.F.C., A.F.R.Ae.S.: "The Operation of Flying Boats in the Mediterranean," before R.Ae.S.
- Feb. 6 Professor E. G. Coker, D.Sc., F.R.S.: "Photo-Elastic Methods of Measuring Stress," before I.Ae.E.
- Feb. 19 Major R. V. Southwell, A.F.R.Ae.S. (Superintendent, Aerodynamics Department, National Physical Laboratory): (Title to be announced later), before R.Ae.S.
- Feb. 20 Mr. H. L. J. Hinkler: "Flying in Australia," before I.Ae.E.
- Mar. 5 Lieut.-Col. C. B. Heald, C.B.E. (Medical Adviser to the Director of Civil Aviation, Air Ministry): "Some Medical Aspects of Air Transport," before R.Ae.S.
- Mar. 6 M. E. Dewoitine: "The Advantages of Metal Construction," before I.Ae.E.

EDITORIAL COMMENT.



FORTUNATELY it is extremely rare that one has, in this country, to record an aeroplane accident of so serious a character as that which occurred on December 24 near Croydon, and in which eight people lost their lives. The tragedy is made all the more sad by the fact of its occurrence so close to Christmas, almost on Christmas Eve, in fact, the passengers being on their way to spend the Yuletide on the Continent, and little dreaming, when they emplaned a few minutes earlier, of the sad fate which awaited them. To their relatives who remain, in a small measure, the universal sympathy which has been extended may help to soften the grief which the swift calamity has called forth.

With regard to the accident itself, there is, at present, little light thrown upon the initial cause of the crash, the inquest having been adjourned until January 9. Of the ultimate cause there does not seem to be much doubt. If the statement of eye-witnesses be accepted, the machine was seen to nose-dive to the ground, and then to catch fire. There is usually only one cause of a machine nose-diving near the ground, *i.e.* loss of flying speed and stalling. At present, as we have said, insufficient evidence exists upon which to base any clear opinion, and owing to the machine catching fire it seems doubtful whether such evidence will be available, but unless any part in the control system of the machine broke—an extremely unlikely occurrence under the very rigid system of inspection in force on the airways—it seems reasonable to suppose that the machine stalled when too near the ground to enable it to be righted.

As to the probable initial causes leading to the accident, there are two theories being advanced in aviation circles. One is that the engine began to fail, for some reason unknown, shortly after the machine left the aerodrome, and that the pilot attempted to turn back, while the second is that the machine was climbing slowly but got into a down-current which caused it to lose height and ultimately strike the ground. Both explanations sound feasible enough, but which is the correct one? If either is, it is not, in any case, possible to say.

Some surprise may be felt at the fact that the machine caught fire after striking the ground, as the petrol tanks are, in the D.H.34, placed on the top plane and thus well away from the engine. It should be remembered, however, that if the machine did indeed strike the ground nearly vertically, and crumpled up, the tanks would probably then be fairly close to the engine, and any small fire started, for instance by the petrol in the carburettors and pipes, would quickly spread to the petrol flowing from the tanks. Under such circumstances obviously none of the usual safeguards against fire would avail, and the lesson to be learned from the sad accident appears to be that quite different precautions must be taken.

In this connection sight should not be lost of a new type of fire extinguisher, quite automatic in action, which has been invented by a French aviator, M. Bechard, who has worked upon the problem for a long time. M. Bechard has recently made a tour of France demonstrating his invention. Time after time he has taken up the machine in which his fire extinguisher is fitted and has deliberately set the machine on fire. On every occasion the fire has been put out in a very short time. How the invention would work in a crash we are not at present sufficiently

informed. Briefly explained, the system consists in an arrangement whereby, as soon as the temperature in the engine housing exceeds a certain figure, the chemical substance employed is automatically sprayed by rotating nozzles, over a considerable area, and the fire has, on every occasion when the extinguisher has been tested, been put out before it had time to spread to the rest of the machine.

The probabilities are that the pipe leads of the extinguisher system would, in a crash such as that at Croydon, be broken by the shock of the impact with the ground, and that the extinguisher would then become inoperative. Nevertheless, the invention is one which should be very carefully examined in order that nothing shall be left undone which can be done to minimise the fire risk. It is, perhaps, unlikely that any of the unfortunate victims of Wednesday's tragedy would have survived the shock, even if there had been no fire. That, doubtless, will be a matter to be looked into at the inquest, but quite apart from this, the absence of fire might have considerably facilitated the work of discovering the probable cause of the accident, and thus have helped towards the avoidance of a repetition of what is one of the saddest accidents in the history of British aviation.

Airmen's Gallantry in Iraq

THE King has approved of the following rewards in recognition of gallant and distinguished service in Iraq:—

Distinguished Flying Cross

Wing Commander E. H. Johnston, O.B.E.

Flight-Lieut. F. L. Luxmoore.

Sir Sefton Brancker's Air Tour

SIR SEFTON BRANCKER, who arrived at Baghdad on December 20 last on his way to India, spent some days in that city interviewing prominent people in connection with the airship service to India, after which he resumed his journey in the D.H.50 (Siddleley "Puma"), piloted by Alan Cobham. Bushire was reached on December 27, and on the following morning they left for Bandar Abbas. Karachi was reached on December 30.

An Italian Altitude Record

It is reported from Turin that last week the Italian pilot Bottalla beat the altitude record for machines carrying a load of 1,500 kgs., by reaching a height of over 5,400 m. (17,500 ft.). The pilot was in the air for 1 hour 50 mins.

A World's Record for France?

THE French pilot, M. Doret, flying over the Villesauvage-La Marmogne circuit last week-end, covered 1,000 kms. (630 miles) in 4 hrs. 30 mins. 32 $\frac{1}{2}$ secs., or an average speed of 221.7 kms.p.h. (137.5 m.p.h.). It is claimed that this is a world's record—the previous one, held by the Americans Harris and Lockwood, being 205 kms.p.h. (127 m.p.h.).

D'Oisy's Next Big Flight

CAPT. PELLETIER D'OISY, the hero of the Paris-Tokio flight, will probably start on another big flight some time this month. This will consist of a flight, starting from Paris, across the Sahara and back on a standard four-engined Blériot commercial biplane. He will be accompanied by Colonel de Goys (Department of Military Aeronautics), while Colonel Vuillemin, accompanied by Capt. Dagnaux, will pilot a similar machine over the same route, which will terminate at Lake Chad.

Berliner Helicopter Coming to England

It is stated that the American helicopter, designed by Mr. Henry Berliner, which has made several successful flights under the observance of the U.S. Government, is coming to England in order to compete for the Air Ministry's £50,000 helicopter prize. Its pilot will be Lieut. Harold R. Harris, of the U.S. Army Air Service.

Junior Institution of Engineers: "Aircraft in Japan"

ON Friday, December 19, Col. The Master of Sempill delivered a lecture on "Aircraft in Japan."

Col. Sempill said that the Japanese Air force had been raised and developed entirely under the supervision of a

British mission during the last three years. The Japanese made very good pilots, but it took some time for them to be sufficiently interested in the mechanical side of the training. They regarded a breakdown more as a nuisance than an adventure.

The lecturer described the preparation of the aerodrome with its central hangars, and mentioned the quaint consecration ceremony which was carried out on it. Slides were shown of the various portions of the aerodrome and the surrounding country, and of a large lagoon which enabled the station to be used as a seaplane base as well. Further illustrations were given of the types of aircraft used in Japan, some of which were fitted with metal propellers. One particularly interesting view from an aeroplane showed H.M.S. *Renown* in Yokohama Harbour, with a thick mist towering above it, and then right above the mist the white top of Mount Fuji-yama standing out with remarkable clearness in spite of its being a great distance away.

Royal Aeronautical Society

A TECHNICAL DISCUSSION will be held in the Library of the Royal Aeronautical Society, at 7, Albemarle Street, W. 1, at 5.30 p.m. on Thursday, January 8, on "The Use of the Wind Channel to Aircraft Designers." The discussion will be opened by Mr. C. C. Walker, of the de Havilland Aircraft Company. Members may bring friends.

U.S. Air Mail Fatality

ON December 21 last one of the night air-mail machines flying between Chicago and Omaha crashed in a snowstorm. The body of the pilot, Charles Gilbert, was found half a mile away from the wrecked machine, and it is assumed that he had jumped with his parachute, but the latter had fouled the falling machine.

Father Christmas at Smith's

IN accordance with their usual custom, S. Smith and Sons (M.A.), Ltd., the well-known motor accessory manufacturers, gave a Christmas party on December 24 at their Cricklewood factory to over 750 children of their employés. In addition to a sumptuous tea, the children were entertained by a dancing display by the Chester Juveniles, while Mr. B. Haviland, the works manager, arrayed as Father Christmas, gave each kiddie a present from the giant Christmas-tree, together with sweets and fruit. The whole of the expenses were borne by the management and staff of the Smith head office and factory. Welfare work amongst manufacturing firms in England is not so far advanced as in the States, and credit is due to Smith's for organising several functions each year for the purpose of promoting better understanding between the management and workers. During the winter months whist drives and dances take place periodically while in the summer the members of the Smith Athletic Club foregather on the fine sports ground at Neasden.

THE VICKERS "VEDETTE" FLYING BOAT

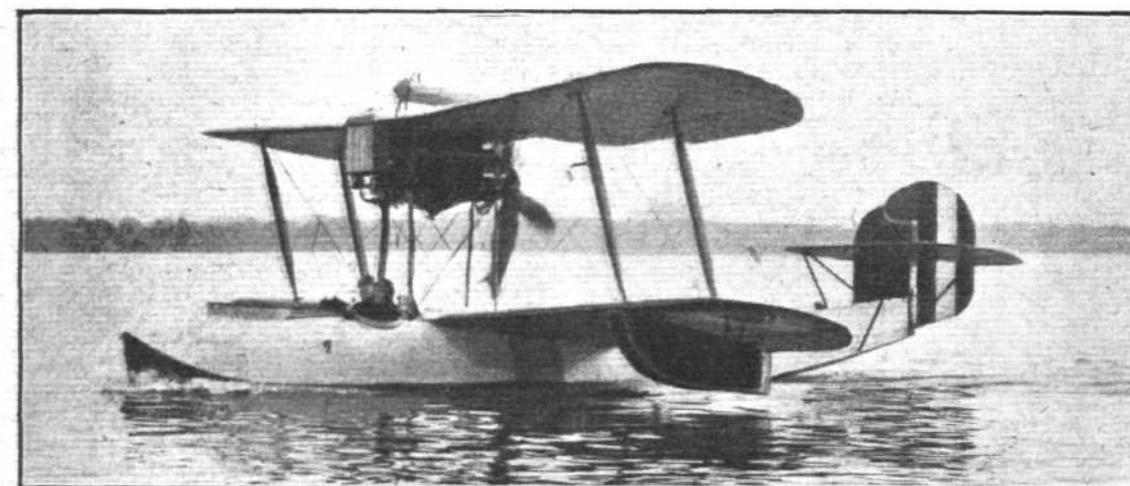
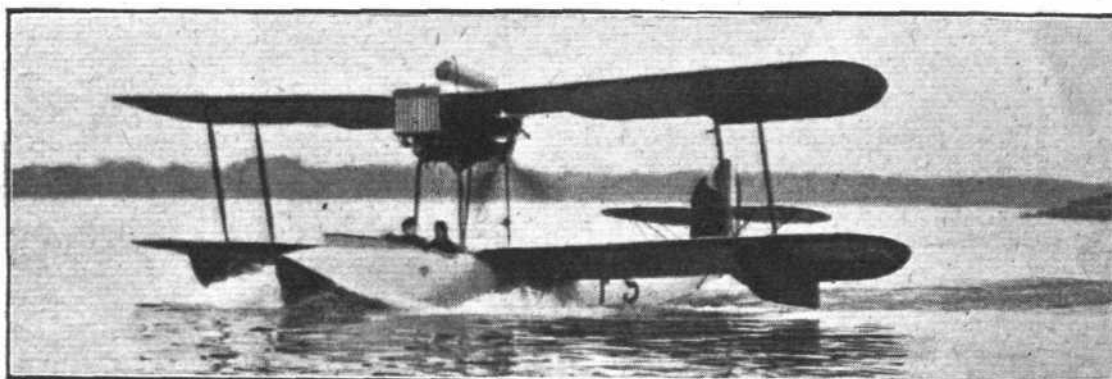
First Machine Designed and Built by Canadian Vickers

As the first aircraft to be designed and built in Canada, from home-grown timbers mostly, considerable interest attaches to the Vickers flying boat, designed and built by Canadian Vickers, Ltd., of Montreal. The machine was required especially for forest fire patrol and for photographic survey work, and the innumerable lakes and rivers of Canada naturally suggested the seaplane or flying boat

as a suitable type. After going into the pros and cons. of the matter, it was decided to produce a flying boat, and the Vickers "Vedette," the subject of the accompanying photographs and description, was the result. Mr. W. T. Reid, at one time chief designer to the Bristol Aeroplane Co., was taken on as designer, and arrived in Canada about the middle of June. After getting together a staff in Canada,

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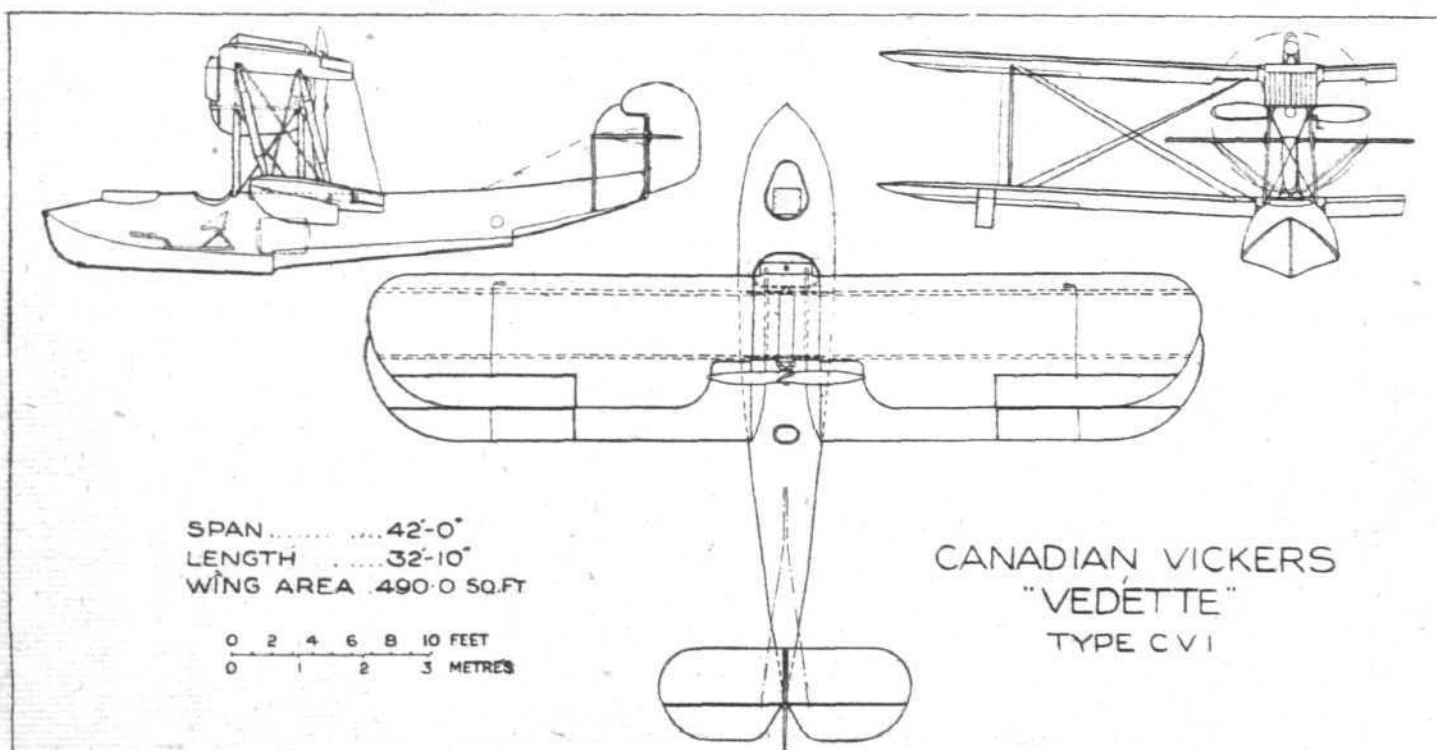
The Canadian Vickers "Vedette" flying boat taxiing. The machine was designed for fire patrol and photographic survey work.



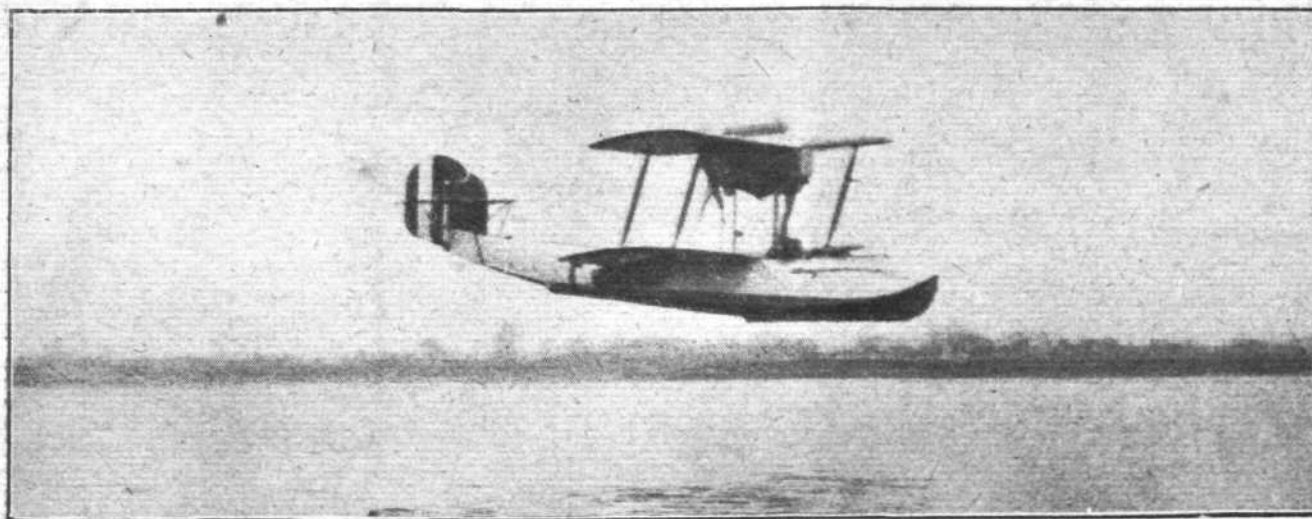
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Another view of the Canadian Vickers "Vedette." The pilot is Flying Officer Plenderleith, of world-flight fame.

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Canadian Vickers "Vedette" flying boat. General arrangement drawings to scale. Either a Rolls-Royce "Falcon" or Wolseley "Viper" can be fitted.



The Canadian Vickers "Vedette" in flight. The machine can be fitted with either Rolls-Royce "Falcon" or Wolseley "Viper."

Mr. Reid set to work, assisted by Mr. Newall, late of Handley Page's, and with characteristic hustle the machine was finished and flying by November 3. Actually the machine could have been finished about a fortnight earlier, but the work was slowed down as the arrival of Flying Officer Plenderleith, who was to test the machine, was delayed.

The Vickers "Vedette" was designed for either the Rolls-Royce "Falcon" or the Wolseley "Viper," the former engine being fitted at first so as to make absolutely sure of getting the required performance, but being replaced later by the "Viper" when it was found that the latter gave well over the specified performance. Incidentally, it might be mentioned that the forest patrol and photographic survey work had previously been carried out mainly with Vickers "Vikings" or with H.S. 2-L's, but that these machines were naturally rather too large when it was only desired to carry pilot and photographer. The "Vedette," in spite of her relatively low power, carries pilot and two passengers, or their equivalent weight, the total disposable load being 480 lbs. Considering that the power is but 200 h.p., the "paying load" is quite good.

The general lay-out of the Vickers "Vedette" is well shown in the accompanying general arrangement drawings and photographs. The machine is of orthodox design in every respect as regards the general disposition of its component parts, being a pusher biplane with flying boat hull. The latter is, in shape, not unlike the famous Vickers "Vikings," i.e. there is a vee bottom with two steps, but the sides are curved gradually into the cambered deck fairing. Constructionally, however, the "Vedette" differs in being planked with but a single skin, afterwards covered externally with fabric and doped.

The wing structure is of normal design, but a somewhat unusual feature, at any rate in flying boats, is that there is but a single pair of struts on each side, in spite of the fact

that the span is 42 ft. The pilot's cockpit, with accommodation for two, is placed immediately forward of the leading edge of the lower plane, with a third cockpit for observer in the nose of the boat, the fairly pronounced stagger making this arrangement possible.

The Wolseley "Viper" engine is mounted on four engine struts rising from the boat hull, and is placed close under the top plane to give clearance to the pusher airscrew. Wing tip floats of usual type are mounted under the lower plane, at the points of attachment of the inter-plane struts.

As already mentioned, the "Vedette" was tested by Flying Officer Plenderleith, and a very good performance was established. With the Rolls-Royce "Falcon" engine the machine was found to have a top speed at sea level of 107 m.p.h., while with the Wolseley "Viper" the top speed at sea level was 98 m.p.h. The following performance figures all relate to the machine as fitted with the "Viper": Speed at 5,000 ft., 95 m.p.h.; at 10,000 ft., 87 m.p.h.; climb to 1,000 ft. in 1.6 mins.; to 5,000 ft. in 9.5 mins.; and to 10,000 ft. in 27.5 mins. The ceiling is 13,800 ft., and the landing speed about 45 m.p.h. With full load the machine gets off in 15 secs., is very dry, and lands without any "vices."

The main dimensions of the "Vedette" are: Length overall, 32 ft. 10 ins.; height, 11 ft. 9 ins.; wing span, 42 ft.; chord, 6 ft. 9 ins.; gap, 6 ft. 6 ins.; stagger, 19.25°; dihedral, 2°; angle of incidence, 6°. Area of main planes with ailerons, 490 sq. ft.; area of tail plane, 34 sq. ft.; area of elevator, 17 sq. ft.; area of fin, 7.5 sq. ft.; area of rudder, 13.5 sq. ft.

The weight of the machine empty, but with water, is 2,263 lbs.; petrol (55 galls.), 396 lbs.; oil (9½ galls.), 64 lbs.; disposable load, including pilot, 480 lbs.; total loaded weight, 3,203 lbs.; wing loading, 6.53 lbs./sq. ft.; power loading, 16 lbs./h.p.

## AIR DISASTER AT CROYDON

On Christmas Eve, December 24, a regrettable aeroplane crash—described as the worst that has happened in the history of civil aviation in this country—occurred at Croydon, as a result of which the pilot and seven passengers were all killed.

A few minutes after noon Imperial Airways "DH.34, G-EBBX" left Croydon aerodrome for Paris, but had not proceeded far when it was observed to be in difficulties, and dived to earth. The machine caught fire immediately it struck the ground, and within a few minutes was totally destroyed—all on board perished.

The pilot of the ill-fated aeroplane was D. A. Stewart, and the names of the passengers were:—Mrs. M. S. Sproston, Mr. G. Sproston, Mr. A. J. Sproston, Mrs. W. Bailey, Mr. M. Luxemburg, Dr. B. Lima and Mr. Cedeic Trudgett. Mr. A. J. Sproston was well-known in the motor industry and in motor racing circles.

The Coroner's inquest on the eight victims, was opened on December 29, when it was adjourned until January 9 next. Further information on the disaster will, therefore, be given in a future issue of FLIGHT. Brief Editorial Comment on the disaster will be found on page 1.

### DECEMBER 24, 1924

"What pilot?" I asked, and the voice in the air replied:  
 "Stewart—the old DH." I fumbled aside  
 The headphones, heard them smash on the floor; your  
 face,  
 Laughing, leaped to my sight, numbing my brain  
 As I sat there, cold. Thoughts drove in a mad, sad race  
 Over my mind. It was here in the Paris rain  
 When I saw you last; you were bothered about a cough  
 That morning—a cough, dear God! And memory flew  
 To a ship coming over the Channel in fog, we two  
 Crowding the cockpit together, the world cut off  
 By billowing cloud, cloud above and below;  
 Beside me your curt man's laugh and your brown face,  
 drawn  
 So strongly, gallantly chiseled; voice like a bell,  
 Eyes that could harden as steel, or soften and glow  
 Tenderly, winning affection—so now you are gone!  
 God, I think, is the richer tonight. Farewell.

—H. BEDFORD-JONES.





(Concluded from p. 804, December, 1924)

## AERO ENGINES AT THE PARIS AERO SHOW

In the very limited space at our disposal it will not be possible to give anything like a detailed account of the aero engines at Paris, nor even a complete list of the engines shown. The following photographs illustrate some of the more interesting engines, particulars of which will be given in the following notes. The British aero engines exhibited have already been dealt with, and consequently no further description appears to be called for here. One exception is the Bristol "Jupiter," on which a very important innovation was to be seen. This consisted in a variable timing gear, operated by the pilot, which enables the timing to be adjusted according to altitude. The gear is very simple and neat, and all that appears on the outside of the engine are a few cranks and levers. That the fitting of this variable timing

gear has been well worth while there can be no doubt, as during tests at Filton a very greatly improved climb and generally better performance have been attained with the "Jupiter" provided with the gear. It is not, we believe, claimed by the Bristol Aeroplane Company that the timing gear provides a substitute for the supercharger, but while that is being developed and improved, the variable timing gear gives, by extremely simple means, some of the advantages of the supercharged aero engines.

### THE ANZANI ENGINES

A very complete series of radial air-cooled engines was shown by Anzani, ranging from the three-cylinder "Y"-type of 25 h.p. to a 10-cylinder model of 250 h.p. The engines were, however, all of well-known type, and do not appear to call for any special comment here.

### A 1,000 H.P. BREGUET

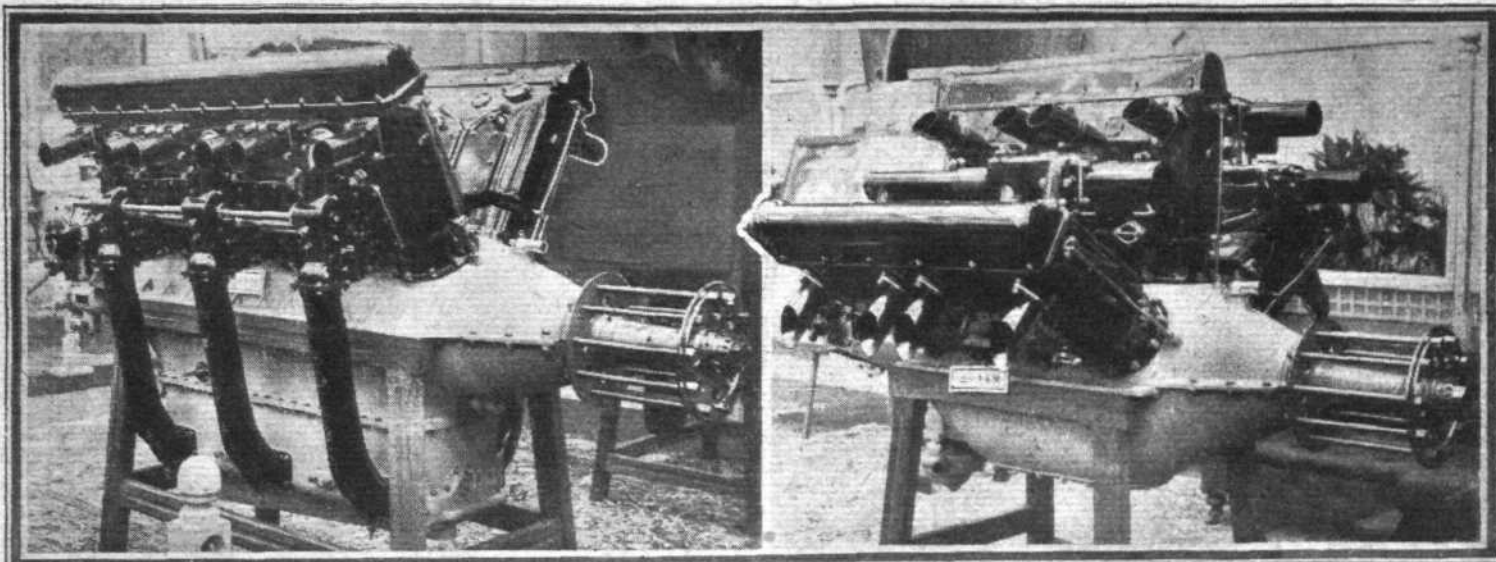
On the Breguet stand was to be seen an imposing aero engine of 1,000 h.p. From looking at it one did not at once associate it with aircraft, as the size was more reminiscent of a marine type Diesel engine, and it is difficult to see how an aeroplane designer could produce a "nose" that would house the Breguet within a reasonable compass. On closer inspection the engine was found to be a development of the Breguet-Bugatti which has been exhibited at several Paris shows, and to consist of two of these units joined together on a common and enlarged crankcase, one engine being on top and the other below the crankcase. The Breguet-Bugatti, it may be remembered, consists of two eight-cylinder-in-line engines placed side by side, and in the 1,000 h.p. engine another such unit has been added below the crankcase. A large propeller shaft runs through the centre of the crankcase, and is driven by reduction gearing from the four engines comprising the complete unit. Each of the four eight-cylinder engines is provided with an automatic clutch, so that should one engine stop it is automatically declutched, the remaining three carrying on. The 1,000 h.p. engine has 32 cylinders, with a bore and stroke of 108 and 160 mm. respectively. The compression ratio is 5.5 to 1. There are three valves per cylinder, two inlets and one exhaust. The engine is stated to develop its rated power of 1,000 h.p. at 2,200 r.p.m., and the weight of the engine complete is 1,090 kgs. (2,400 lbs.). The dimensions of the 1,000 h.p. Breguet are as follows: Length over-all, 2.332 m. (6 ft. 8 ins.); width, 1.104 m. (3 ft. 7½ ins.); height, 1.02 m. (3 ft. 4 ins.).

### THE FARMAN ENGINES

Two engines were exhibited by Henry and Maurice Farman, both of the "W" or "broad arrow" type. It is now several years since the Farman brothers first commenced aero engine work, and during the interval they have been quietly improving their engines until now the type 12 WE at least, rated at 500 h.p., can claim to have "arrived," having to its credit the world's duration record without landing (37 hrs. 59 mins. 10 secs.). The other engine shown, the type 18 WD, is rated at 600 h.p., and as the type title indicates has 18 cylinders placed in "W" formation. It differs from the 12 WE, however (apart from the number of cylinders),



**THE BIGGEST AERO ENGINE AT THE SHOW :** This is the 1,000 h.p. Breguet aero engine, which consists of two Breguet-Bugattis placed on opposite sides of a common crankcase. The engine would be somewhat difficult to instal in an aeroplane of ordinary size.



**THE TWO NEW HISPANO-SUIZAS :** On the left the 450 h.p. 12-cylinder Vee type, and on the right the "W" or "Broad Arrow" type of the same rated horse-power. Both show the usual "clean" lines which one associates with Hispano engines.

in that the cylinders are not monoblocs, but are grouped in pairs. The angle between cylinder is also different, being  $40^\circ$  as compared with the  $60^\circ$  angle of the 12 WE. Both engines can be supplied either with direct drive or with the special sun-and-planet reduction gear developed by Farmans. Any desired gear ratio can be supplied, but two have been standardised—a 2 to 1 for use on slow machines, and a 1.5 to 1 for faster aircraft. The type 12 WE has a bore and stroke of 130 and 160 mm. respectively (total cubic capacity 25 litres), and develops 500 h.p. at 2,150 r.p.m. and 550 h.p. at 2,200 r.p.m. The weight of the 12 WE in running order, but with direct drive, is 455 kgs. (1,000 lbs.), and the substitution of a 2 to 1 reduction gear adds another 39.5 kgs. (87 lbs.) to this, bringing the total weight up to 1,087 lbs., or 2.17 lbs./h.p. (based on nominal power of 500 b.h.p.). The type 18 WD has a bore of 130 mm. and a stroke of 180 mm. The weight dry, with direct drive, is 725 kgs. (1,600 lbs.), and the reduction gear and propeller shaft weigh 51 kgs. (112 lbs.).

#### GNOME AND RHONE

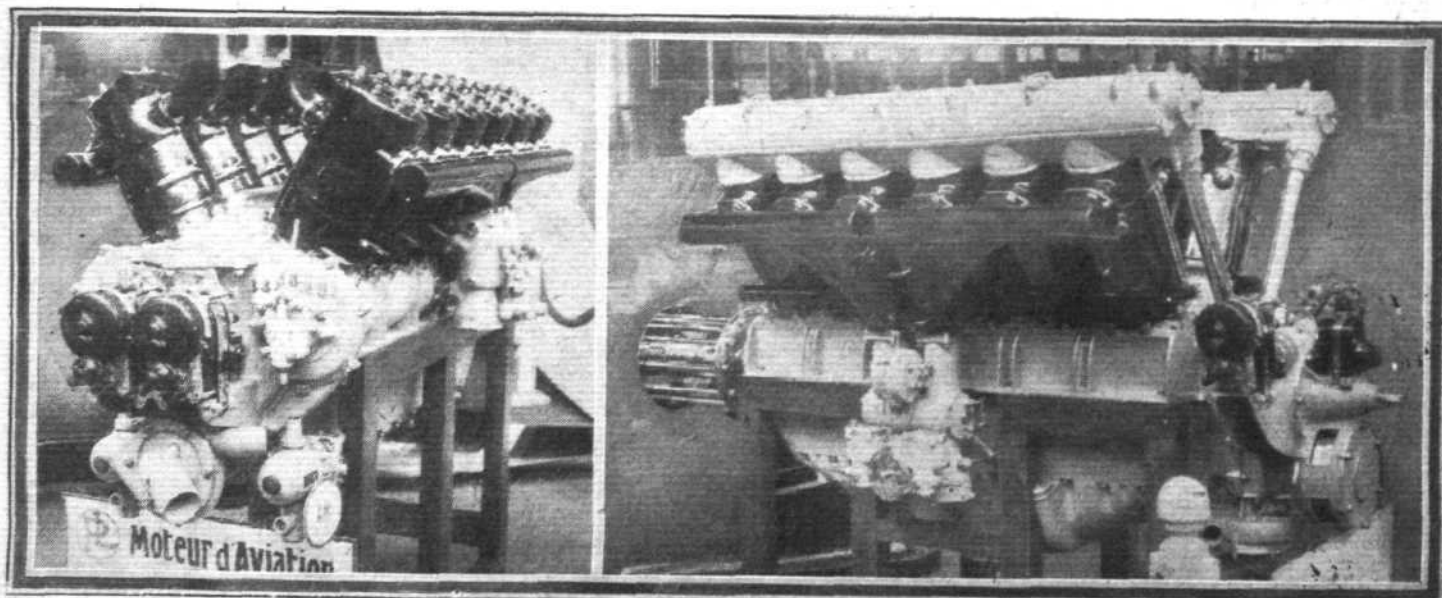
The most imposing item on the Gnome and Rhone stand was a Bristol "Jupiter," which this firm now builds under licence. The French-built engine was, it must be admitted, a very fine piece of work, and seeing it one is not surprised that the "Jupiter" has done so well in French Air Ministry tests. No effort has been spared to make the most of a good design, and the French-built "Jupiter" is a credit to all concerned.

#### THE "HISSOS"

Probably one of the most magnificent strides ever made by an aero-engine firm in a short period of time has been the production of two entirely new types of engine by the famous Hispano-Suiza firm. Both these are rated at 450 h.p., but one is a V-type, while the other is of the W or "broad arrow" formation. Both have 12 cylinders, of a bore and stroke of 140 by 150 mm. respectively, and both have normally a compression ratio of 5.3 to 1. In both types the cylinder banks are placed at an angle of  $60^\circ$ . The total cubic capacity of both types is a little over 27½ litres. Apart from the novel features resulting from the different number of cylinders and the W formation, the characteristic features of the two new Hispanos are the same as in the famous 300 h.p. type, and one of the new engines at least, the W type, has proved itself by establishing, in the Adolphe Bernard "Ferbois" racing monoplane, a new world's speed record of 280 m.p.h. The weight of the V-type engine is 420 kgs. (925 lbs.), and of the W-type 375 kgs. (825 lbs.). In connection with the latter type it is of interest to note that the cylinder blocks are the same as those used in the 800 h.p. type.

#### LORRAINE-DIETRICH

Very special interest was lent to the exhibits of the Lorraine-Dietrich firm by the fact that the engine used by Pelletier d'Oisy on his famous Paris-Tokio flight was shown. The engine, although having obviously had a difficult time of it, was certainly in no worse condition than was to be expected



**TWO PANHARD-LEVASSOR AERO ENGINES :** On the left the 12-cylinder "valveless," and on the right the 500 h.p. Vee type.

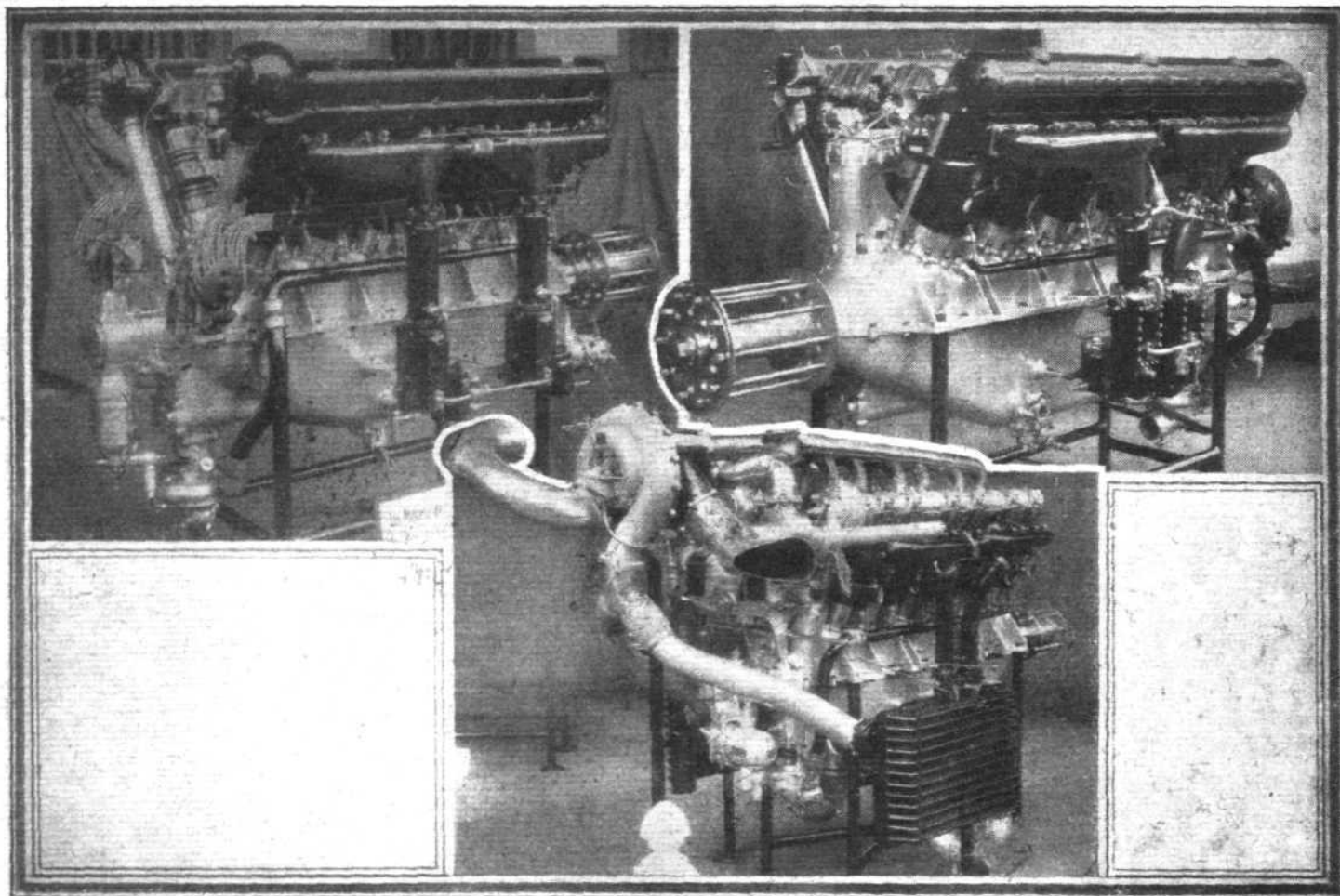


after the gruelling test, and the fact that the engine stood up without giving any serious trouble must for ever rest to the credit of the Lorraine-Dietrich firm and of their chief designer, M. Barbarou.

The 400 h.p. Lorraine used by d'Oisy is of the 12-cylinder V-type, with a bore of 120 mm. and a stroke of 170 mm. Direct drive is employed, and the compression ratio is 5.3 to 1. The normal speed of the engine is 1,600 r.p.m., with a maximum speed of 1,700 r.p.m., at which the engine develops 410 b.h.p. The weight dry is 400 kgs. (880 lbs.), or 2.2 lbs./h.p. The petrol consumption is given as 230 grammes per horse-power per hour (0.55 lb./h.p./hour). The 450 h.p. engine is of the W-type, with three banks of four cylinders each. The bore is 120 mm. and the stroke 180 mm. The maximum power is 470 b.h.p. at 1,860 r.p.m., and the normal speed is 1,800 r.p.m. The petrol consumption given is the

### THE RENAULT ENGINES

An imposing show was made by the Renault firm, and space does not allow of dealing in any detail with all the different types. Our photographs show three distinct models, *i.e.* the 300 h.p. supercharged engine, the 480 h.p. model, and the large 600 h.p. type, all three of the 12-cylinder V-type. The supercharged engine is of the well-known model and requires no introduction. The supercharger installation (Rateau) appeared very straggly, and would be cumbersome to fit into a machine, but very good results have, we believe, been obtained with this engine. The 480 h.p. model has, it is stated, undergone the French type tests, and has run for 50 hours developing 500 h.p. The bore and stroke are 134 by 180 mm. and the compression ratio 5.3 to 1. The rated power of 480 h.p. is developed at a speed of 1,600 r.p.m. The weight dry is 500 kgs. (1,100 lbs.). The 600 h.p. engine has a bore



**RENAULTS AT THE GRAND PALAIS:** The upper left-hand photograph shows the 480 h.p. (rated) type, which has carried out a reliability run of 50 hours at 500 b.h.p. On the right the large 550-675 h.p. Renault. Below, the supercharged Renault.

same as that of the 400 h.p. engine, and the weight dry is 390 kgs. (858 lbs.).

### PANHARD-LEVASSOR

The 500 h.p. Panhard-Levassor engine is of the 12-cylinder V-type, and is of the high-compression type, the compression ratio being 6 to 1. The bore and stroke are 165 mm. and 170 mm. respectively, and the rated power of 500 h.p. is developed at 1,550 r.p.m. The power, it is stated, remains sensibly constant up to about 3,000 m. (10,000 ft.). The weight dry is 590 kgs. (1,300 lbs.), *i.e.* 2.6 lbs./h.p. The second engine exhibited was a sleeve-valve engine rated at 450 h.p.

We were not able to ascertain whether or not this engine has actually been tested, but the makers state that it develops 450 h.p. at 1,500 r.p.m., and 525 h.p. at 1,800 r.p.m. The bore is 140 mm. and the stroke 170 mm., and the compression ratio is 5.4 to 1. The weight dry is given as 545 kgs. (1,200 lbs.). There are many who believe that the aero engine of the future will be of the sleeve-valve type, and the work in this direction by the Panhard-Levassor firm is therefore of more than usual interest. It is claimed, and probably justly so, that this is the first time the Knight sleeve-valve principle has been applied to an aero engine of such large size.

of 160 mm. and a stroke of 180 mm., with a compression ratio of 5.3 to 1, and develops 650 h.p. at 1,600 r.p.m. The weight is 725 kgs. (1,600 lbs.).

In addition the Renault firm have produced direct and geared V-type engines for the French engine competition, both being rated at 450 h.p. Two models of the W type are also being developed, one with direct drive and one with reduction gearing.

### SALMSON

The usual range of radials was to be seen on the Salmson stand, but a new type, designed for light 'planes or touring machines, was exhibited. This is known as the type A.D.9, and is a nine-cylinder, radial, air-cooled engine, with a bore of 70 mm. and a stroke of 86 mm. It is rated at 40 h.p. The small three-cylinder Y-type was also shown. This engine, rated at 15 h.p., has a bore of 70 mm. and a stroke of 86 mm., or, in other words, the cylinders are interchangeable with those of the type A.D.9, as are also the pistons and several other parts.

### THE NEW VASLIN

Reference was made to the new Vaslin light 'plane engine in our description of the Dewoitine light 'plane. This engine has 6 cylinders in line and is water-cooled. The cubic capacity is 2,000 c.c., and the weight of the engine dry is 62 kgs. (136.5 lbs.).

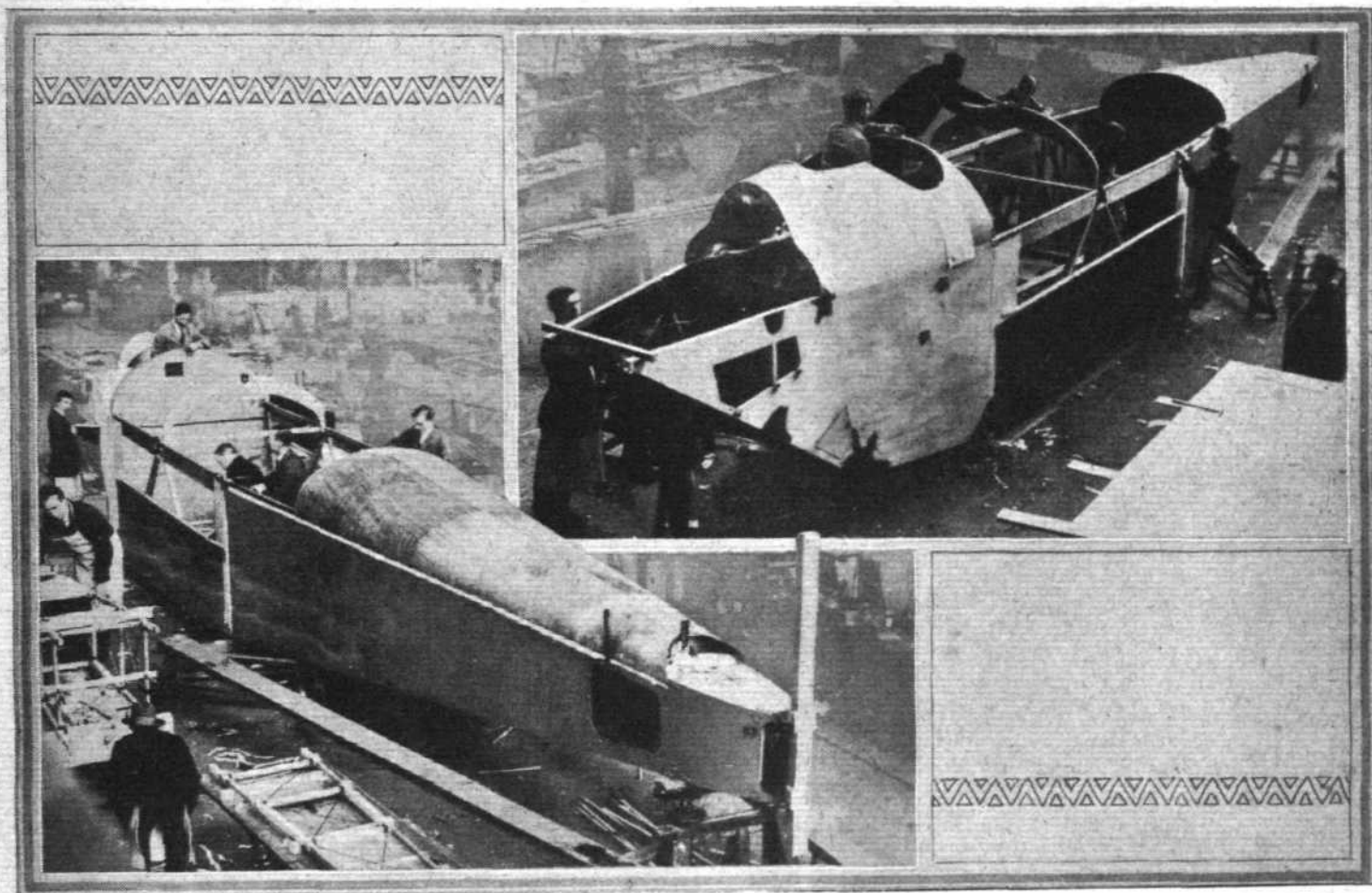
## TWO NEW DE HAVILLAND MACHINES

A SHORT time ago we were able to announce that the de Havilland Aircraft Co., Ltd., were building, at their Stag Lane, Edgware, works, a large air liner to be put on the regular air routes. This machine, the D.H.54, will have accommodation for 14 passengers and will be fitted with a Rolls-Royce "Condor" engine. This week we are able to show our readers two views of the fuselage of this machine during construction at Stag Lane. The men working on the fuselage serve to convey a very good idea of the size, which would not otherwise have been apparent. It will be seen that the cabin will afford ample head-room for standing up, as the height from floor to ceiling is more than 6 ft. Actually the dimensions will be: Length overall, 51 ft.; wing span, 68 ft.; and height, 16 ft.

The seating accommodation will be somewhat unusual in that there will be three rows of seats abreast, a single row along one side and a double row along the other, with a passage running the whole length of the cabin.

The other de Havilland machine of which we are in a position to give details this week is a small two-seater school machine suitable for use by light 'plane clubs. It may be remembered that Capt. de Havilland did not, last summer, consider 1,100 c.c. sufficient for two-seater light 'planes, and it is not, therefore, surprising to learn that the new de Havilland school machine, to be known as the D.H.60, will fall outside the light 'plane class, as the term has come to be understood in this country.

The D.H. 60 (perhaps the fact that the type number is that of the old "clutching hand" with a 0 added is significant) will be a tractor biplane of normal form, and will be equipped with a new engine of 50-60 h.p., which is being produced in close collaboration with the D.H. designing department. (No, we are sorry, but that is all the information we are permitted to give.) This engine will be of exceptionally robust construction, and it is expected that it will be as easy to maintain as the engine of a motor-car.



**A NEW DE HAVILLAND AIR LINER :** The fuselage of the D.H.54 in course of construction at the Stag Lane Works of the de Havilland Aircraft Company. The men alongside give some idea of the size of the machine, which will carry 14 passengers. The power plant is to be a Rolls-Royce "Condor."

A novel feature of the D.H.54, which will have a total loaded weight of 11,000 lbs., will be the oleo-rubber undercarriage, which has been so designed that it can be dropped should the machine be forced to alight on the sea. Not only so, but the lower portion of the fuselage will be made watertight so that the machine will float on an even keel. Thus it will be seen that the de Havilland Aircraft Company have been working on much the same lines as Pierre Levasseur in France, who exhibited at the Paris show a two-seater fighter incorporating these features. As the D.H.54 was designed long before the Paris show, the firm can certainly not be accused of copying, and it will be remembered that last summer a D.H. machine was deliberately "landed" in the sea at Felixstowe in order to find out the behaviour. As the new D.H.54 is to have a cruising speed of 100 m.p.h., the expenditure of 50 h.p. per paying passenger cannot be regarded as excessive. The landing speed, it is estimated, will be about 52 m.p.h., which is a very reasonable figure, and should enable the machine to be put down almost anywhere, especially as the new de Havilland automatic wing flaps will be fitted.

The machine is to be fitted with dual control, but the set in the passenger's seat will be easily removable. A luggage space capable of holding approximately 40 lbs. is to be provided. The biplane wings will be designed to fold, and it is estimated that the operation will occupy but three minutes. The overall width folded will be 10 ft., so that the question of housing should be a simple one.

A special undercarriage has been designed for the D.H.60 which, although of very simple form, will absorb even very violent shocks. The petrol system, it is almost superfluous to state, will be of the direct-gravity type, and the tank capacity will be sufficient for 3½ hours' flying.

The D.H.60 will weigh, fully loaded, 1,350 lbs., which, although somewhat heavier than the weight of the Lympne two-seater light 'planes, is considerably lighter than the loaded weight of training machines hitherto in use. A maximum speed of 90 m.p.h. has been calculated, with a landing speed of 38 m.p.h., so that it will be seen that the speed range, if realised in practice, is excellent. The fuel economy should be fairly good, the estimated figure being 20 miles per gallon.



## AVIATION IN 1924

GENERALLY speaking the past year has not, with one or two exceptions, produced anything particularly noteworthy as far as aviation is concerned. Yet, on the whole, it has not been an altogether unsatisfactory one for British aviation. As we remarked in our leading article last week, 1924 has in the main been a year devoted to "spade work" and the planning of new schemes, all of which has, we think, tended considerably to strengthen the foundations of aviation and to stabilise aerial transport as a whole.

The Labour Government, which held the reins of office at the commencement of the year, made but little change in the air policy laid down by its predecessors, and was responsible for some good work in the advancement of aviation, to which we will refer later. Service aviation saw a continuation of the necessary expansion and re-equipment of the R.A.F., and with the advent of the present, Mr. Baldwin's, Ministry the good work is still proceeding with even, we hope, increased vigour. The very important question of Home Defence (Air) progressed further and made a good start during the year.

The value of aircraft in "small wars" was very strikingly emphasised on two occasions during the year. The first comprised a lengthy despatch from Air Vice-Marshal Sir J. M. Salmond, describing some successful operations carried out in Kurdistan against the pro-Turk intrigues of Shaikh Mahmoud, which was published in a supplement to the *London Gazette* for June 10. In this despatch Sir John made special reference to the important part played by aircraft, but we have not the space here to give the full details, and can only record that the work done by aircraft was extraordinary—they not only carried out offensive operations but dropped proclamations, carried supplies and messages, provided a rapid means of transport between important positions, and last but not least conveyed sick and wounded from hostile areas. For full details of these operations we would refer our readers to the report on same which we published in *FLIGHT* for June 19, 1924.

The other occasion was the publication of a note, signed by Lord Thomson, presented to Parliament, which described the method of employment of the Air Arm in Iraq. Here again we cannot go into details (*see FLIGHT* for August 14, 1924), but we may say that the effectiveness of air control under conditions obtaining in such countries as Iraq was clearly demonstrated in this Note.

*A propos* of the above it may be recorded here that Lord Thomson—who, during his term of office as Air Minister, displayed considerable interest and energy in aviation matters—made a tour of the Middle East in September and October, during which he covered 2,500 miles by air, and was thus able to inspect the principal air centres in Northern Iraq, Palestine and Egypt within the space of eight days.

While dealing with Service Aviation it may be of interest to note that for the first time in the history of the British Navy aircraft played an important part in the review of the Fleet by H.M. The King at Spithead, on July 27, 1924. They not only escorted the Royal Yacht, but had a place of honour among the 200 odd warships lined up.

Perhaps the most important action on the part of the Government concerning aviation, embracing both the Military and the Civil side, was the decision given in May as regards its airship policy. While the Government rejected the Burney scheme put forward by the Airship Guarantee Company, they agreed to a modified scheme, which was in effect to include the construction of two new airships and a comprehensive programme of lighter-than-air research and experiment—one of the existing airships being reconditioned for the latter work.

One of the new airships was to be built by the Air Ministry, and the second ship to be built, under contract, by the Airship Guarantee Company. Both airships were to have a capacity of 5,000,000 cu. ft. Included in the contract was a clause under which the Airship Guarantee Company would be permitted to re-purchase the airship from the Air Ministry at a reduced figure, on completion of satisfactory flying trials, provided that it is to be operated in connection with an approved British commercial airship service, and that it shall be available for use by the State if required.

It was further proposed that the Air Ministry should undertake the construction of a terminal and an intermediate base overseas, with the necessary facilities to enable these two airships to be operated with safety between England and India. It was estimated that, allowing for the re-purchase of the second airship by its constructors, the net expenditure

involved over a three years' programme would not exceed £1,200,000. A start was made on this scheme towards the end of the year, and work was commenced on the two 5,000,000 cub. ft. ships—the Air Ministry one at Cardington and the Civilian vessel of the Airship Guarantee Company (an associated company of Vickers, Ltd.) at Howden, while R.33 was got in readiness for elaborate full-scale experiments.

In connection with this Airship scheme Air Vice-Marshal Sir Sefton Brancker, our energetic Director of Civil Aviation—who, by the way, appeared to spend the greater part of 1924 in the air, flying from place to place attending to various important air matters—commenced a protracted aerial tour to India at the end of November, being piloted by the famous air-taxi pilot Alan Cobham in the equally famous "D.H.50" biplane (Siddeley "Puma"). The purpose of this tour—which is still in progress—is, firstly, to survey the aerial possibilities of a route to India, with aeroplane feeder services *en route*, and secondly, on arrival in India Sir Sefton will be able to attend the conference with the Indian Government, to be held this month, dealing with the various matters connected with the airship service to India. Incidentally, it was also Sir Sefton's intention during this tour to study very closely possible new air routes over which Imperial Airways, Ltd., may extend their services.

Before leaving the subject of Airships it may be as well, perhaps, if we refer to other happenings in this connection that took place during 1924. The most important was undoubtedly the crossing of the Atlantic by the Zeppelin airship "Z.R.3," constructed at Friedrichshafen for the U.S. Government under the Versailles Treaty. The "Z.R.3" was completed towards the end of summer, and made its first trial flight on August 27, 1924. Then, after one or two false starts a few days previously, it set out on its journey from Friedrichshafen to America on October 12. Capt. Eckner, the well-known Zeppelin pilot, was in command, and with him was Capt. Steel and three American experts representing America. The ship rose at 6 a.m., and flying *via* Basel and the Bay of Biscay, it passed over Horta, Azores, early the following afternoon. Some time after thick fog was encountered, and they wirelessly a message asking for compass bearings. They then turned north for better weather conditions, and in the early hours of Tuesday morning, October 14, once again struck heavy weather, against which they battled all day. However, shortly before midnight they American coast was sighted, off the southern portion of Nova Scotia, after which good progress was made to Lakehurst, N.J., *via* Boston and New York. The "Z.R.3" landed at Lakehurst at 9.55 a.m. (3 p.m. G.M.T.) on October 15, having taken 80 hours 45 mins. to cover 5,000 miles.

Just about this time another big airship flight was accomplished. On October 7 the American-built Zeppelin, "ZR1" or "Shenandoah," manned by a crew of 37 under the command of Commander Lansdowne, and filled with helium gas, left Lakehurst for a test flight of 7,000 miles to the Pacific coast and back. Passing over Carolina, Georgia and Atlanta, the "Shenandoah" arrived at Fort Worth, Texas, at 7.25 p.m. on October 8, and was moored for the night. Continuing the next day, heavy weather was encountered in the night, and the airship narrowly escaped disaster when flying over the Rocky Mountains. The Pacific coast, at San Diego, was, however, reached at 10.28 p.m., October 10, and the airship safely moored.

After 12 days' stay at the mooring mast at San Diego, the "Shenandoah" set out on the return journey, and after cruising the whole length of the Pacific coast and back, arrived safely at Lakehurst in the early hours of October 25. During this test the "Shenandoah" completed about 9,000 miles in 18 days, encountered all sorts of weather, and made five landings—mostly with the aid of mooring masts. By this flight much valuable information was gathered and the possibilities of airship transport demonstrated under practical conditions.

The "Shenandoah," it may be recorded here, experienced a remarkable adventure early in the year, when, on January 16, a 50 m.p.h. gale sprang up while the airship was moored to the mast at Lakehurst. First, the cover of the upper fin was ripped open, and then the mooring tube was wrenched clean out of its reinforcing girders, causing the airship to break away from the mast, leaving behind on the latter the nose cap and a length of the axial cable. The first two gas bags were deflated by the breaking of the axial cable, but no further damage was done. Two minutes after the break



away four of the engines were got going, but in spite of this the airship was blown backwards for nearly two hours. Then the remaining two engines were brought into operation, and, thanks to the extraordinary skill of Capt. Anton Heinen—the old Zeppelin test pilot—who was in charge, and to a lessening of the gale, the "Shenandoah" was slowly but surely brought back to Lakehurst after a hard fight lasting about nine hours and safely housed in the shed. An examination showed that little damage had been done, but this incident demonstrated that airships possessed some practical qualities after all.

Progress in airship development during 1924 has also to be recorded in favour of Italy—where, as a matter of fact, airships have always made good. In the summer a remarkable airship was produced, designed by Eng. Nobile. This ship, known as the "Mr." was the smallest semi-rigid airship ever constructed. The "Mr." had a capacity of only 960 cubic m. (33,000 cubic ft.), a length of 32 m. (105 ft.) and a useful load (including pilot and passenger) of 450 kgs. (992 lbs.), or 42.5 per cent. of the total lift—a truly extraordinary figure. Its speed was 65 km.p.h. (40 m.p.h.), and its engine was of 40 h.p. This little airship was described in *FLIGHT* for September 4.

Civil aviation has been making fair advance during the past twelve months. Several new services came into operation, both at home and abroad, but the question of flying over Germany together with that of modifying the restrictions laid down by the Versailles Treaty as to the construction of aircraft in Germany, still remains to be settled satisfactorily. Civil aviation in this country started on a new era in 1924, when Imperial Airways, Ltd.—the "Million Pound Monopoly Company"—came into being, and, after a slight hitch at the commencement, made rapid progress in establishing what is now undoubtedly the most efficient air transport concern in the world. It is a thousand pities that, just as its first year was drawing to a close, a serious accident to one of its machines, resulting in the death of the pilot and seven passengers, should mar its otherwise successful operations.

The formation of Imperial Airways, Ltd., was the outcome of the recommendations of the Hambling Committee of 1923. Briefly, the salient features of the scheme may be stated as follows: The new company was to combine or take over the four air transport companies then operating the air services. It was to receive a subsidy of £1,000,000 spread over a period of 10 years, during which time it was to operate, from April 1, an efficient air service for the transport of passengers, mails and freight, over the existing routes and any further routes which, in the opinion of the directors of the company, might be considered advisable.

On April 1 the new company took over the air services, etc., of the four separate companies (Daimler Airways, Handley Page, Ltd., Instone Air Line and the British Marine Air Navigation Company). Unfortunately, however, owing to a disagreement between the company and the pilots and ground staff on the subject of management and pay, operations did not commence right away as expected. In fact, it was over a month before a settlement was reached and the British air services, which had in the meanwhile remained idle, were resumed. Although much was promised as regards new services, during the nine months of its existence, Imperial Airways has only carried on with those services previously operated by the four separate companies. It must be admitted, however, that it has accomplished this work well. During April and May 47,940 miles were flown, the ton-miles amounting to 25,630. In June the mileage rose to 99,710, or 47,353 ton-miles, while July showed a still further increase—146,840 miles or 72,827 ton-miles. Figures for the remaining part of the year are not available, but it may be said that the services maintained a similar high standard in accordance with varying conditions of season, weather, etc.

As regards other air services in this country, one or two attempts were made by private enterprise, with more or less success, to run special passenger or newspaper services. On April 30 an air mail service was inaugurated between Belfast and Liverpool, being operated by D.H.50 machines. This service ran for a short time, but was eventually suspended on account of very bad weather conditions and the unsuitable nature of the terminal aerodromes. It was replaced, however, in June by another daily service between Belfast and Glasgow, the D.H.50 again being employed. Then in September Northern Air Lines inaugurated a newspapers and mail air service between Belfast and Carlisle.

Generally speaking, commercial aviation was somewhat more lively abroad during the past year. In Europe several new services, or extensions to existing routes, came into

operation, while in America the trans-Continental air mail service, which had been in successful operation, during daylight only, since 1921, was extended so as to run day and night, with the result that mails could be carried between New York and San Francisco in about 28 hours. The new service came into operation on July 1, and has so far proved extremely successful. In Canada the Laurentide Air Service established an air line between Angliers, Quebec and the gold mining area in north-western Quebec, which has, we believe, proved fairly successful. Aerial survey work was also carried out with some considerable success in various parts of the world. In the summer the Air Ministry at the request of the Scottish Fishery Board, detailed three flying boats for the purpose of carrying out the experiment of locating from the air herring shoals, while the Oxford University Arctic Expedition made good use of an Avro (Armstrong-Siddeley "Lynx") seaplane in their operations.

The sporting side of Aviation (including air records, etc.) during 1924 was not particularly brilliant so far as Great Britain was concerned. The few big aviation events that did take place in this country were, we think, somewhat disappointing—except, perhaps, in the case of the R.A.F. Aerial Pageant, which was as good as ever. While as regards air records, not a single one was secured by Great Britain, America and France between them holding a "ding-dong" contest for the honour of securing nearly all of these.

The Aerial Derby—hitherto one of our biggest annual events—was abandoned on account of the extremely small entry of really high-speed machines. It had been hoped that the King's Cup Race (or "Circuit of Britain") for 1924 would be a seaplane event, but as the only suitable machines for such an event were Service ones and the Air Ministry did not see its way to allow these to take part, this race resolved itself into a sort of "go-as-you-please-with-any-type" handicap. Although it was open to both sea- and land-planes, out of the ten machines entered only one belonged to the former type—a Fairey (Napier "Lion") III D. There were, however, two Supermarine "Seagull" ("Lion") amphibians, but these associated themselves for the greater part with the land-planes. The course, of about 950 miles, did not, this time, possess any "controls," only turning points (situated at Leith, Dumbarton and Falmouth), and the start and finish were located at Martlesham Heath and Felixstowe, and Lee-on-Solent respectively. The 1924 winner was undoubtedly a popular one—Alan J. Cobham, on a D.H.50 (230 h.p. Siddeley "Puma") biplane.

Other big events in this country were the Two-seater Light 'Plane Competitions and the Grosvenor Cup Race (also for light 'planes), both held at Lympne in September-October. These light 'plane competitions were undoubtedly the best of our sporting events, and they were extremely interesting. No fewer than 19 machines were entered, all excellent examples of aero design and construction. Unfortunately, for various reasons, a large number of the entries "eliminated" before the actual trials, but those that survived put up good performances. The Air Ministry's first prize of £2,000 was won by M. Piercey on the Beardmore "Wee Bee I" monoplane, fitted with a Bristol "Cherub" engine; while second place (£1,000) was secured by Uwins on a Bristol "Brownie" monoplane ("Cherub"). Before leaving this subject we would like to refer to the special issues of *FLIGHT* issued in connection with the Light 'Plane Competitions. In the issue of September 25, 1924, detailed descriptions, with general arrangement drawings, of all the competing machines were given, whilst in the two following issues (October 2 and 9) there appeared full, illustrated, reports on the actual competitions.

The one and only British representative for the International Schneider Cup Seaplane Race—which was to have taken place in America—a promising machine built by the Gloucestershire Aircraft Co., Ltd., was crashed during its first trials, and as the Italian entry was withdrawn, the National Aeronautic Association of U.S.A. very sportingly cancelled the race for 1924.

One feature of the year's work in the sporting branch of aviation stands out rather prominently, viz., a series of big flights—successful and otherwise—which will undoubtedly have to be recorded amongst the great events in the history of aviation. These events—the successful American round-the-world flight and the unsuccessful, but none the less glorious, British attempt, D'Oisy's Paris-Tokio dash, the Portuguese Lisbon-Macao, the two round Australia, the Argentine Amsterdam-Tokio, the Dutch Amsterdam-Batavia flights, Cobham's London-Africa and back trip, and, finally, the crossing of the Atlantic by Zeppelin Z.R.3, previously referred to—have all, in one way or another, been of great service in furthering the progress of aviation.



# THE ROYAL AIR FORCE

London Gazette, December 23, 1924

## General Duties Branch

The following are granted permanent commissions, in ranks stated (Dec. 24):—  
Flight-Lieut. W. A. Bouchier Savile (Lieut. R.A.); Flying Officer R. L. Ragg. The following Pilot Officers are promoted to the rank of Flying Officer:—H. M. Schofield; Nov. 14. S. A. Young; Nov. 15. Flying Officer A. E. G. Forrest (Capt. Indian Army, ret'd.) is granted the hon. rank of Flight-Lieut.; Dec. 4. Pilot Officer on probation B. W. Hemsley is confirmed in rank; Nov. 11. Sqdn.-Ldr. L. M. Bailey, A.F.C., is placed on half-pay scale B from Nov. 16, 1924, to Nov. 25, 1924 (substituted for Gazette, Nov. 18, 1924). Flying Officer B. J. O'C. Hanstock is transferred to Reserve, Class C; Dec. 24. Observer Officer T. W. Hayes is placed on retired list; Dec. 24. Pilot Officer T. de L. Neill resigns his short service commission; Dec. 24.

The short service commissions of the following Pilot Officers on probation are terminated on cessation of duty (Dec. 24):—F. W. D. Rushby, J. A. Wall.

## Stores Branch

Flying Officer A. E. F. McCreary is granted a permanent commission, in rank stated; Dec. 24. Pilot Officer on probation R. G. A. Vallance is confirmed in rank and is promoted to rank of Flying Officer; Nov. 19.

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

Wing Commander E. M. Murray, D.S.O., M.C., to R.A.F. Depot, on transfer to Home Estab.; 12.11.24. Do. to R.A.F. Cadet College, Cranwell, pending taking over duty as Assistant Commandant; 15.12.24.

**Squadron Leaders:** T. H. England, D.S.C., A.F.C., to R.A.F. Depot, on transfer to Home Estab.; 14.11.24. E. D. Johnson, A.F.C., to R.A.F. Cadet College, Cranwell; 27.11.24.

**Flight Lieutenants:** H. E. Walker, M.C., D.F.C., to No. 32 Sqdn., Kenley; 15.12.24. R. S. Aitken, M.C., A.F.C., to H.Q., Malta; 22.11.24. A. G. Bond, A.F.C., to R.A.F. Depot, on transfer to Home Estab.; 12.11.24. E. F. Waring, D.F.C., to R.A.F. Depot, on transfer to Home Estab.; 4.12.24. H. C. Todd and A. A. Ward, to No. 5 Flying Training Sch., Sealand; 29.12.24.

**Flying Officers:** H. G. P. Ovenden, to No. 99 Sqdn., Bircham Newton; 5.12.24. H. C. Black, to Inland Area Aircraft Depot, Henlow; 16.12.24. C. McC. Vincent, D.F.C., to Experimental Section, R.A.F., S. Farnborough; 5.1.25. W. A. B. Buscarlet, to R.A.F. Cadet College, Cranwell; 29.12.24. A. A. N. D. Pentland, M.C., D.F.C., to Central Flying Sch., Upavon; 16.12.24. (Hon. F/Lieut.) A. W. Bates and A. W. Daly, to No. 11 Sqdn., Netheravon; 29.12.24. W. N. L. Cope and (Hon. F/Lieut.) C. W. Croxford, D.S.C., to No. 2 Flying Training Sch., Digby; 29.12.24. R. L. Bateman and H. M. Schofield, to No. 24 Sqdn., Kenley; 29.12.24. R. S. Barbour, to No. 39 Sqdn., Spittlegate; 29.12.24. N. C. Seward, S. T. Littleton, H. J. Brown, W. R. Day, J. K. Smith, R. P. Mollard and G. C. Selater, to R.A.F. Depot, on transfer to Home Estab.; 12.11.24. V. H. Clift, to R.A.F. Base, Malta; 6.11.24.

## Accountant Branch

The short service commission of Pilot Officer on probation B. J. L. Gordon-Ingilis is terminated; Dec. 24.

## Princess Mary's Royal Air Force Nursing Service

Miss A. M. Cosgrove resigns her appt. as Staff Nurse; Nov. 14.

## Reserve of Air Force Officers

The following are granted commissions, on probation in General Duties Branch in ranks stated; Dec. 23.

**Class A.—Flying Officers.**—B. P. B. Carter, D.F.C., H. S. Eaton, E. C. Gordon, C. Thomas. **Pilot Officers.**—C. S. Clarke, L. H. A. Fray, H. G. Harper, J. Paterson, J. J. B. Rutter, R. D. Wayman.

**Class B.—Flying Officers.**—L. W. Norman, H. J. Price, T. Terrell, D.S.C. **Pilot Officer.**—G. J. Holdercroft.

The following Pilot Officers are promoted to rank of Flying Officer:—C. F. D. Evans; Oct. 21. W. E. Taylor; Nov. 13. J. J. Scholes; Nov. 13. H. L. Miller; Dec. 16. H. W. B. Hansford; Dec. 23.

The following Pilot Officers are confirmed in rank:—J. H. C. Harrold; Dec. 10. G. H. Keat; Dec. 17. Flying Officer A. S. Keep, M.C., relinquishes his commission on account of ill-health, and is permitted to retain his rank; Dec. 24.

## Stores Branch

**Squadron Leaders:** T. Fawdry, M.B.E., to Air Ministry; 27.11.24. P. M. Brambleby, to R.A.F. Depot; 20.12.24.

**Flying Officer** G. E. Pyne, to No. 1 Stores Depot, Kidbrooke; 20.12.24.

## Accountant Branch

**Flying Officer** W. E. Ennis, to No. 4 Flying Training Sch., Egypt; 28.11.24.

**Pilot Officers:** A. E. West, J. R. Thomas, S. C. George, R. C. Dickinson, S. W. Hill, R. W. Collinson and L. M. Spicer, all posted to No. 1 Stores Depot, Kidbrooke, for course of instruction, on appointment to permanent commissions; 3.12.24. C. E. Aston, H. J. Titherington, K. E. M. Holmes, J. McL. Murray, C. F. Goatcher, C. Lorimer and E. Smith, to No. 1 Stores Depot, Kidbrooke; 2.12.24.

## Medical Branch

**Flight Lieutenants:** J. F. Gallagher, to No. 111 Sqdn., Duxford; 15.12.24. (Hon. Sqdn. Ldr.) F. W. Squair, M.B., T.D., to R.A.F. Depot; 18.12.24. T. J. X. Canton, M.B., to R.A.F. Depot; 30.12.24.

**Flying Officer:** B. W. Cross, to R.A.F. Hospital, Cranwell; 28.12.24.

## IN PARLIAMENT

### R.A.F. Home Defence Units

SIR J. NALL, on December 18, asked the Secretary of State for Air whether, having regard to the fact that auxiliary personnel raised on a militia basis and trained in existing Air Force stations would be less expensive to administer than units raised on a Territorial basis, he can state which system will be adopted for augmenting the air forces available for home defence?

SIR S. HOARE: The regular home defence units are to be augmented by both Auxiliary Air Force and Special Reserve squadrons. The pilots of the Special Reserve units are to be taught to fly at regular Air Force stations, but a similar system of attaching other personnel to regular squadrons would not, it is considered, prove to be either efficient or economical. Only men skilled in trades similar to those in the Royal Air Force are to be enlisted, and the small amount of periodical training that they will require can be carried out more conveniently at their units in the industrial centres where their homes will be, rather than at the often remote regular Air Force stations.

### Cadets' Fees

LIEUT.-COMDR. KENWORTHY asked the Secretary of State for Air if he is aware that his predecessor was examining into the question of the abolition of the fees for young men entering the Royal Air Force as cadets; what are his intentions with regard to this matter; and if he is aware that under the present system many promising lads, including sons of serving officers, are barred out from the officer branch of the Royal Air Force on account of lack of means?

SIR S. HOARE: I am aware that the question referred to by the hon. and gallant Member was being considered by my predecessor, but no decision had been reached, and I hope myself to go into it fully in the near future.

### Flying Accounts

MR. THURTELL asked the number of fatal accidents in connection with flying which have taken place in the Royal Air Force for the 12 months ending September 30, 1924?

SIR S. HOARE: There have been 47 fatal accidents during the period in question.

### Forced Landings (Compensation)

MR. FOOT MITCHELL asked the Secretary of State for Air the number of cases in which compensation is being paid for the descent of aeroplanes on agricultural land; and what is the amount of such compensation for each of the last four periods of six months?

SIR S. HOARE: The following are the particulars of compensation paid in respect of damage done to crops, fences, hedges, cattle, etc., by forced landings of aircraft on agricultural land:—

### Period, Number of Cases, and Compensation Paid

|                                   |               |
|-----------------------------------|---------------|
| January 1 to June 30, 1923 (17),  | £156 14s. 2d. |
| July 1 to December 31, 1923 (33), | £203 8s. 6d.  |
| January 1 to June 30, 1924 (10),  | £35 13s. 2d.  |
| July 1, 1924, to date (47),       | £178 18s. 6d. |
| Totals (107),                     | £574 14s. 4d. |

### Boys' Wing, Cranwell

MR. TAYLOR asked whether it is intended to close the boys' wing at the Cranwell centre; and, if so, whether arrangements will be made to absorb the civilian instructors at other depots of the Royal Air Force?

SIR S. HOARE: It is intended to close the boys' wing when all aircraft apprentices now at Cranwell have completed their course of training. This will not be until September, 1927. The reduction of the boys' wing will therefore be a gradual process, and endeavours will be made to absorb the civilian instructors in other training units of the Royal Air Force.

### Air Services (Prague)

SIR H. BRITAIN asked whether any arrangement has yet been made for an air service to Prague?

SIR S. HOARE: I am most anxious to see an air service to Prague started at the earliest possible date. I regret, however, that, though negotiations are continuing, it has not been found possible as yet to make arrangements for this service.

### Government Departments.—Air Ministry

MISS WILKINSON asked the Secretary of State for Air what are the prospects of promotion in the case of women clerical officers employed in his Department?

SIR S. HOARE: Having regard to the large number of men clerical officers of senior standing, I am afraid it will be some time before it will be found possible to promote any of the women clerical officers to the higher clerical grade, but they will be considered for promotion in due course.

SIR F. SYKES asked whether the appointment of a director of scientific research at the Air Ministry, decided upon in the year 1923, has yet been filled; if not, what salary and terms of engagement are being offered in connection with the appointment; to how many persons has the appointment been offered; and what steps, if any, are now being taken to fill the appointment?

SIR S. HOARE: The matter has been receiving my close attention since I have been in office, and I hope to be in a position to make a statement on it shortly.

MR. TAYLOR asked what is the status of civilian instructors in the R.A.F.; whether there is an official circular describing the grading and rates of pay; whether they are on a permanent or temporary basis of employment; if the appointments are permanent, will the civilian instructors be entitled to pension on the same basis as other civil servants; and was the reduction in the award of sick pay made after consultation with the civilian instructors, or was any notification given to them of any variation of the terms of their employment?

SIR S. HOARE: In answer to the first and second parts of the question, the status of the civilian instructors referred to is that of civilian employees and their conditions of service are laid down in their letters of appointment and the Air Ministry Regulations for civilian employees. As regards the third and fourth parts, their employment is on a temporary basis, and they do not qualify for pension on retirement, but may in some cases qualify for

gratuities on retirement under the conditions laid down in the Superannuation Acts. As regards the fifth part, the reduction in the scale of sick pay was not made after consultation with the civilian instructors, but it was accompanied by an improvement in the scale of pay which made the conditions as a whole more favourable than before. These changes were notified to them through the officers under whom they were serving.

Miss Wilkinson asked the Secretary of State for Air whether he is aware that between 1920 and 1924 no promotions of writing assistants and typists to the clerical class took place in his Department, although an agreement had been arrived at on the National Whitley Council for the Civil Service under which promotions of suitable writing assistants and typists were to take place *pari passu* with the appointment of candidates from the limited competitions; that other Departments, including the War Office, had not only made a number of promotions during those years, but that some have made a number of promotions recently; and whether he will look into the matter with a view to placing his women staff in a less disadvantageous position compared to similar staffs in other Departments than hitherto.

Sir S. Hoare: I am aware of the position as represented by the hon. Member, but it must be remembered that most of the writing assistants and typists in the Air Ministry are of shorter established service than those in other Departments. I am glad to say, however, that the selection of some of them for trial in the duties of the clerical class has been under consideration, and I hope that the names of those so selected will shortly be approved.

Miss Wilkinson asked the Secretary of State for Air whether he will consider the appointment of a woman higher-clerical or super-clerical officer to the establishment branch of his Department for the purpose of dealing with questions of sickness and similar matters affecting women employed in the typing and other sections of the Air Ministry, in accordance with the general practice of the Civil Service and of commercial firms employing considerable numbers of women?

Sir S. Hoare: In view of the small number of women involved, excluding the typing staff, whose chief superintendent acts as intermediary between them and the establishment division, it is not considered that the appointment of a woman higher-clerical officer is justified for the purpose of dealing with questions of sickness and similar matters. There is a rest room, in charge of a qualified nurse, for cases of sickness which may occur among the staff.

#### R.A.F. Accidents

Sir F. SYKES asked whether the pilot concerned in the flying accidents at Wembley and at Lympne last summer was medically examined and passed fit for flying duty in the period between the two accidents; and whether he was similarly examined and passed after the accident at Lympne and before undertaking further flying?

Sir S. Hoare: The answer to both parts of the question is in the affirmative. Sir F. Sykes asked the Secretary of State for Air what are the regulations governing the resumption of flying duties after accident in the case of the Royal Air Force and civil pilots, respectively?

Sir S. Hoare: As regards Royal Air Force pilots, the regulations are contained in paragraphs 1444 and 639 of the King's Regulations and Air Council Instructions, 1924. Broadly, their effect is that when a flying accident has occurred, the personnel involved are medically examined either if apparently injured or if (although the personnel are apparently uninjured) any damage occurs to the machine. If found unfit as a result of this examination, they are not allowed to resume flying duty until found medically fit as a result of a further examination. As regards civil pilots, the holder of a licence to fly aircraft carrying passengers or goods for hire or reward is required by paragraph 53A of the Air Navigation Directions, 1922 (A.N.D.3), as amended by the Air Navigation Directions, 1924 (A.N.D.3D), to be medically re-examined and pronounced fit before resuming air duties.

#### THE DE HAVILLAND AIRCRAFT COMPANY, LTD.

In the absence of the Chairman, Mr. A. S. Butler, Mr. A. E. Turner presided over the fourth annual general meeting of the De Havilland Aircraft Co., Ltd., held at the registered offices, Stag Lane Aerodrome, Edgware, on December 22, 1924.

Mr. Turner, in moving the adoption of the accounts, expressed his pleasure at being able again to report a very satisfactory year's trading, which would allow, for the fourth year in succession, a dividend of 10 per cent. to be paid, after again transferring £5,000 to reserve.

In dealing with the company's activities during the past year, he referred to the various successes, including winning the King's Cup for the air race round Britain, a highly successful and entirely trouble-free flight round Australia and a record-breaking flight from England to Africa in one day, achieved by the new De H. 50 four-passenger Commercial aeroplane. He stated:—"The demonstrations thus given of the efficiency of this machine have resulted in orders being received from very widespread sources, including the only three air transport companies operating in Australia, from Imperial Airways, Ltd., from the Czecho-Slovakian Government, and from Northern Lines, Ltd. The possession of these machines will certainly promote a demand for spare parts, etc., from the companies operating them, and this demand will naturally benefit the company. Further, there are at present at least two important negotiations for air lines under consideration in different parts of the world, and should these mature, de H. 50 aeroplanes would almost certainly be used, with material benefit to this company."

In explaining why he had dwelt at such length on the civil aviation side of the business, Mr. Turner continued:—

"At the present time, more than half of our business is with the Air Ministry; the remainder comes largely from civil aviation in all parts of the world in which we have been at much pains to establish a connection, based on our reputation for the design of commercial aircraft. Although we hope that the Air Ministry business will get still larger, and we are doing our utmost to achieve this, we firmly believe that there is an immense field for development in the region of civil aviation, and this belief our past experience amply justifies. We are therefore devoting considerable time and

energy to furthering this branch of our enterprise, and we feel confident that future events will prove this policy well founded."

He also reviewed the company's activities in regard to sales of military machines, spare parts, etc., to the British Air Ministry, to the efforts which were being made still further to increase the sale of the company's products in all parts of the world and to the highly successful results obtained with the aeroplane hire service and the Flying Training School.

In conclusion, he invited the shareholders to subscribe for the further 25,000 £1 shares which were now being issued, pointing out that as this fresh capital was required for the extension of the premises and the provision of new plant and equipment, there was every indication that the excellent results hitherto obtained would be fully maintained.

The resolution to pay a dividend of 10 per cent. was unanimously agreed, and after the other business of re-appointing auditors, etc., had been dealt with, the meeting closed with a hearty vote of thanks to the Chairman for the very efficient manner in which he had conducted the business.

#### PUBLICATIONS RECEIVED

*Revue Juridique Internationale de la Locomotion Aérienne*. November, 1924. Edition Aérienne, 4, Rue Tronchet, Paris.

*Journal of the American Society of Naval Engineers*. November, 1924. American Society of Naval Engineers, Navy Department, Washington, D.C., U.S.A.

*The History of Aeronautics in Great Britain*. By J. E. Hodgson. London: Oxford University Press. Price 84s. net.

*Les Carburateurs Zenith et les Moteurs d'Aviation*. Société du Carburateur "Zenith," 49-51, Chemin Feuillat, Lyon, France.

*Technical Memorandum No. 289. Two-seat Light Airplanes*. November, 1924. U.S. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

*Department of Overseas Trade. Report on the Economical Situation in the Belgian Congo*, July, 1924. By C. K. Ledger. London: H.M. Stationery Office, Kingsway, W.C. 2. Price 1s. 6d. net. By post 1s. 7d.

*Aero Digest*, December, 1924. Aero Digest, 220, West 42nd Street, New York City. Price 25 cents.

*The Elements of the Lanchester-Prandtl Theory of Aeroplane Lift and Drag*. By H. M. Martin. Offices of Engineering, 35-36, Bedford Street, Strand, London, W.C.2. Price 2s. 6d. net.

#### AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

##### APPLIED FOR IN 1923

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| 20,237. | A. R. THORNBAD.                 | Packing for parachutes.               | (212,511.) |
| 20,238. | A. R. THORNBAD.                 | Parachutes.                           | (212,512.) |
| 20,239. | A. R. THORNBAD.                 | Parachutes.                           | (212,513.) |
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